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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/717,647

11/21/2003

Song-Yean Cho

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EXAMINER

DALEY, CLIFTON G

ART UNIT

PAPER NUMBER

2624

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/717,647	<b>Applicant(s)</b> CHO ET AL.	
	<b>Examiner</b> CLIFTON G. DALEY	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 6 is/are rejected.
- 7) ☒ Claim(s) 3-5 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/30/2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recited "encoded DC and AC coefficients" (line 7) imply an encoding step which is missing from the claim. It is not clear how these "encoded" coefficients are obtained.

### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (Lei Tang, "Methods for encrypting and decrypting MPEG video data efficiently", 1997, Proceedings of the fourth ACM international conference on Multimedia, pp. 219-229) in view of Watanabe (US 7114073).

**Regarding claim 1**, Tang teaches a method and analogous apparatus for encrypting and compressing multimedia data, comprising the steps of:

creating Discrete Cosine Transform (DCT) coefficients by applying input multimedia data to a DCT unit, and quantizing the created DCT coefficients (**Figure 1, § 2, ¶ 1, and § 3, ¶ 2**);

encrypting and compressing a quantized Differential Coefficient (DC coefficient) and a quantized Amplitude Coefficient (AC coefficient) by transforming encoded DC coefficients (**page 221, section 2.1, step 4, lines 1-3**) and AC coefficients depending on a certain encryption key at the time of entropy encoding quantized DC and AC coefficients of the quantized DCT coefficients (**page 223 § 4.3, ¶ 1, lines 1-3, i.e. the 8x8 block consists of the DC coefficient and all AC coefficients. The 1x64 list is the encryption key (page 223, § 4.2, ¶ 2, lines 5-6), and "Zig-zag" pattern in Figure 1 replaced with encrypted order (page 223, § 4.2, ¶ 2)**); and

Huffmann coding the encrypted DC and AC coefficients using a Huffmann table and outputting the coded DC and AC coefficients (**page 226, § 5, ¶ 5 (last paragraph), lines 9-12**).

Tang does not explicitly disclose that the AC coefficients are encoded prior to encryption.

Watanabe discloses an image processing method wherein AC coefficients are encoded (**Fig. 1, Electronic Watermark Data Embedding Unit, 102, i.e. encoded with watermark**) prior to encryption.

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement Watanabe's watermark embedding step in Tang's encryption

method, in order to identify illegally reproduced content (**Watanabe: column 1, lines 20-24**).

**Regarding claim 2**, Tang combined with Watanabe teaches the method according to claim 1, wherein the step of encrypting and compressing the DC and AC coefficients comprises the steps of: performing Differential Pulse Code Modulation (DPCM) of the quantized DC coefficient and Run Length Coding (RLC) of the quantized AC coefficient (**page 221, Figure 1 and page 221, right column, item 4, Zig-zag scan**); determining the encryption key of the AC and DC coefficients and a random constant *r* indicating a start bit of the encryption key, using variable length information including a Variable Length Code (VLC) and a Variable Length Integer (VLI), of each of the DC and AC coefficients obtained through the DPCM and the RLC (**page 225, § 4.5, ¶ 4 (last paragraph), lines 10-16, i.e. random constant *r* determines permutation list**); and encrypting the AC and DC coefficients using the determined encryption key (**i.e. by changing the zig-zag order via the permutation list disclosed above**).

**Summary of Applicant's remarks:** Tang does not teach or suggest any transformation of an encoded AC or DC coefficient.

**Examiner's response:** Tang's method of remapping the locations of the coefficients is by definition a mathematical transformation of the coefficients. Furthermore, at the time of transformation, the DC coefficient is an encoded coefficient (**page 221, section 2.1, step 4, lines 1-3**). The encoded AC coefficient is taught by

Watanabe. The original 102(b) rejection is withdrawn and a new 103(a) rejection provided above.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 5479527) in view of Luttrell et al. (hereinafter "Luttrell"; US Patent Application 2002/0018565).

**Regarding claim 6**, Chen teaches an apparatus for encrypting and compressing multimedia data, comprising:

a DCT unit for creating DCT coefficients including AC and DC coefficients by DCT transforming input multimedia data into discrete signals **(Fig. 4, DCT unit 102)**;

a quantization unit for quantizing the created DCT coefficients using a quantization table **(Fig. 4, Quantizer 104)**; and

an entropy encoding unit for encoding quantized AC and DC coefficients by entropy encoding the quantized AC and DC coefficients (Fig. 4, Encoder Circuits 111).

Chen does not teach the limitation wherein the entropy encoding unit encrypts the encoded AC and DC coefficients using a certain encryption key, wherein the encryption key is based on a VLC and a VLI of the quantized AC and DC coefficients.

Luttrell discloses a method for encrypting multimedia data wherein the entropy encoded coefficients are encrypted using a certain encryption key, wherein the encryption key is based on a VLC and a VLI of the quantized AC and DC coefficients **(page 3, paragraph [0024] and paragraph 0026, i.e. the encryption key is based on a VLC, which is based on a VLI (Chen: column 9, lines 48-56))**.

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement Luttrell's encryption method step in Chen's multimedia compression apparatus, in order to provide conditional access to the multimedia content **(Luttrell: page 1, paragraph [0006], lines 1-3).**

**Summary of Applicant's remarks:** Tang does not teach the amended recitation of an encryption key based on a VLC and a VLI of the quantized AC and DC coefficients.

**Examiner's response:** Applicant's arguments are moot in view of the new grounds of rejection provided above. The original 102(b) rejection is withdrawn and a new 103(a) rejection provided above.

### ***Response to Arguments***

4. Applicant's arguments, see page 9, filed 1/30/2008, with respect to claims 3-5 have been fully considered and are persuasive. The 103(a) rejection of claims 3-5 has been withdrawn.

### ***Allowable Subject Matter***

5. Claims 3-5 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLIFTON G. DALEY whose telephone number is 571-270-3144. The examiner can normally be reached on Monday - Friday 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Samir Ahmed  
Examiner  
Art Unit 2624

CGD  
4/28/2008



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/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624